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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------------------------------------------------------------------|-------------|----------------------|---------------------|------------------|
| 10/720,934 | 11/24/2003 | Reza M. Golzarian | ITL.1055US (P17792) | 5240 |
| 21906 | 7590 | 01/18/2006 | EXAMINER | |
| TROP PRUNER & HU, PC 8554 KATY FREEWAY SUITE 100 HOUSTON, TX 77024 | | | BREWSTER, WILLIAM M | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2823 | |

DATE MAILED: 01/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/720,934

Applicant(s)

GOLZARIAN, REZA M.

Examiner

William M. Brewster

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 5 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 2,3,8,12,13,15,19 and 20 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 21-25 is/are allowed.
- 6) ☒ Claim(s) 1,4-7,9-11,14 and 16-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 4-7, 9-11, 14, 16-18, 21-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamamoto et al., Japan Publication No. 06-077155, 18 March 1994.

Yamamoto anticipates a method comprising: in fig. 1B, exposing an implanted 19 wafer to acoustic energy, by a laser, to activate the implanted species,

CONSTITUTION;

limitations from claim 11, a method comprising: implanting a semiconductor wafer; and activating the implanted species by mechanically perturbing said wafer, through the laser treatment, CONSTITUTION forming kinetic and infrared energy to mechanically perturb the implanted species;

limitations from claim 4, the method of claim 1 including generating acoustic energy using a laser beam, p. 2, ¶ 13;

limitations from claim 5, the method of claim 1 including exposing the implanted wafer to acoustic energy while heating the wafer: generated by the laser treatments, p. 3, ¶ 13-14;

limitations from claims 6, 16, the method of claims 5, 14 wherein heating the wafer includes exposing the wafer to a laser beam, pp. 1-2, ¶ 5;

limitations from claims 7, 17, the method of claims 6, 16 wherein exposing the wafer to a laser beam includes exposing the wafer to an infrared laser beam: wherein the laser treatment may be selected from multiple lasers, p. 3, ¶ 13-14, and in fig. 2, the graph displays the wavelength of the lasers, some of which are greater than 700 nm, or 0.7 μ m. The laser wavelengths greater than 700 nm may be considered to be infrared. Proffered as evidence is the *Wikipedia Infrared* definition, which categorizes 0.7 μ m as infrared.

Limitations from claim 9, the method of claim 1 including exposing the wafer to two laser beams, said laser beams having different energy, one of said laser beams to heat said wafer, pp. 1-2, ¶ 5, and the other of said laser beams to generate phonons, shorter wavelengths, p. 2, ¶ 13-14;

limitations from claim 10, the method of claim 1 including annealing the wafer after ion implantation and subsequently using acoustic energy to activate the implanted species by the generation of phonons, p. 2, ¶ 20;

limitations from claim 14, the method of claims 11, 21 including applying heat to said wafer, p. 3, ¶ 20;

limitations from claim 18, the method of claim 16 including mechanically perturbing said wafer at the same time said wafer is being heated, through the laser treatment, CONSTITUTION forming kinetic and infrared energy to mechanically perturb the implanted species.

For claim 1, Yamamoto does not enumerate the underlying thermodynamics and physics of the energy transfer of a laser. Proffered as evidence, Carome et al., on p. 1462, in the Abstract and the Introduction uses ruby laser to generate acoustic signals by dielectric breakdown in liquids and solids. As Yamamoto also uses a ruby laser exciting the surface, Yamamoto also generates acoustic waves, some of which penetrate the substrate and in turn activate the implants.

For claim 11, again Yamamoto does not enumerate the underlying thermodynamics and physics of the energy transfer of a laser. Proffered as evidence Martinis et al., US Patent No. 5,634,718 does highlight the physics. In col. 5, lines 34-52, Martinis explains that heat causes vibrations of the atoms. Vibrating is a form of mechanical perturbation. Therefore, Yamamoto's laser, which heats the wafer, causes vibrations and hence mechanical perturbations.

Allowed Claims

Claims 21-25 are allowed.

The following is an examiner's statement of reasons for allowance: the features of claim 21, lines 2-5, "exposing an implanted semiconductor wafer to a first laser at a first energy to heat said wafer to a temperature in excessive of 1000°C; and exposing said implanted semiconductor wafer to a second laser at a second energy lower than said first energy to heat said wafer to a temperature less than 1000°C." cannot be found in the prior art of record.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

Applicant's arguments with respect to claims 1, and 11 have been considered. For claim 1, applicant questions the Hess reference, stating that the laser used may be different than Yamamoto. Carome uses a ruby laser to form acoustic energy in a solid. Yamamoto also uses a ruby laser on a solid (the substrate) and thus generates acoustic energy.

For claim 11, applicant argues that, "the claim call for providing a stimulus which is in the form of a mechanical perturbation to begin with."

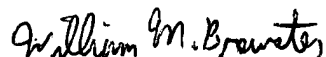
Examiner can not find any limitation as to how the mechanical perturbation is generated. Thus Yamamoto reads on the claim.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William M. Brewster whose telephone number is 571-272-1854. The examiner can normally be reached on Full Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith can be reached on 571-272-1907. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2823

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



10 January 2005
WB

WILLIAM M. BREWSTER
PRIMARY EXAMINER